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Gear data report from Atlantic plankton cruises for the R/V Pathfinder, March 1961 - March 1962

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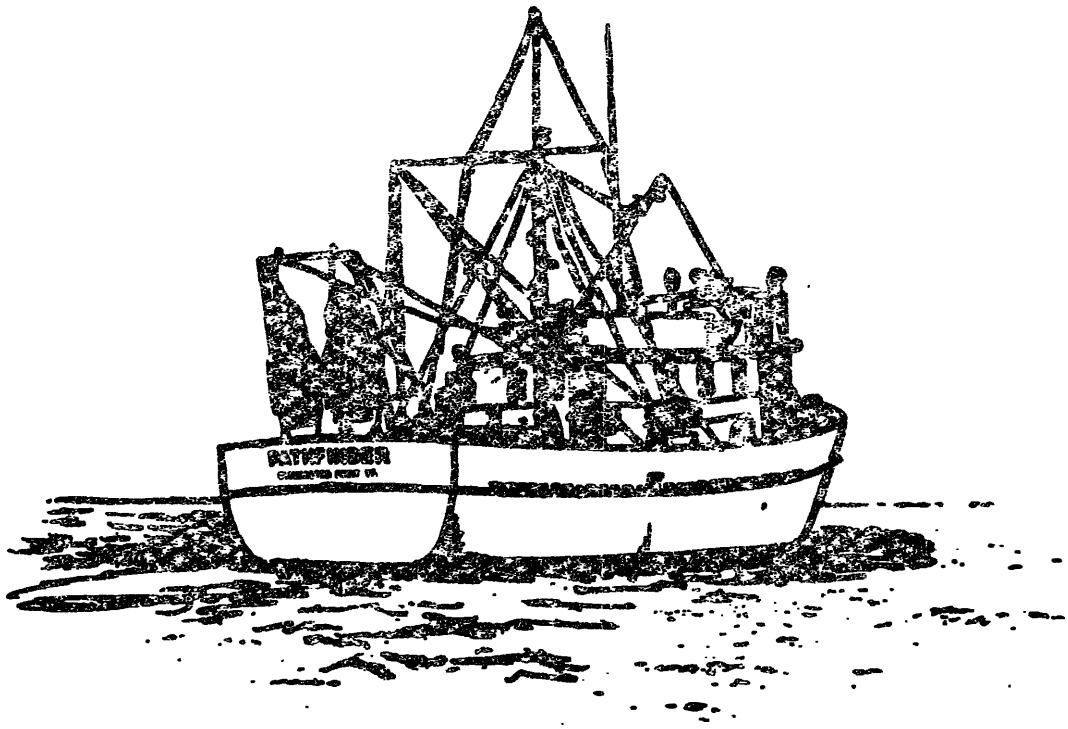
Virginia Institute of Marine Science

GEAR DATA REPORT FROM ATLANTIC PLANKTON CRUISES FOR THE R.V. PATHFINDER

March 1961...March 1962



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GEAR DATA REPORT FROM ATLANTIC PLANKTON CRUISES

FOR THE R/V PATHFINDER

March 1961 - March 1962

In March 1961, the Department of Ichthyology of the Virginia Institute of Marine Science began the second year of monthly cruises to obtain information on the distribution and abundance of pelagic fish eggs and larvae. The station pattern of earlier cruises (Dec. 1959 - Jan. 1961) described by Joseph et al. (1961) was changed. Eight regular stations spaced at 20-mile intervals in the Atlantic and 8 stations 10 miles apart in Chesapeake Bay and the York and Pamunkey rivers were sampled each month. In addition, two alternate stations 80 miles offshore were sampled when weather permitted. Station locations and designations are shown in Table 1. Extra stations were sampled offshore as well as in the mouth of eastern shore inlets, in Chesapeake Bay and in the York and Pamunkey rivers (Table 2).

This report lists the various types of sampling gear employed and the duration of tows (Table 3). Gulf III samplers designed and described by Gehringer (1952) and meter nets were the basic units of gear. Following Bridger (1956) the Gulf III samplers were modified by reduction of the nosepiece opening from 16" to 8". Flow-meters were eliminated because they did not operate satisfactorily; therefore, the 2 foot tail assembly was no longer needed. For some surface sampling offshore and all sampling in Chesapeake Bay, York and Pamunkey rivers, meter nets were used. In these nets, two types of materials were used: (1) dacron, 0.7 mm woven mesh; (2) Marion Textiles 1 mm knitted mesh. The surface meter

nets were towed from the stern of the Pathfinder. A pair of meter nets, used for oblique and bottom tows, were secured within a hexagonal iron frame of sufficient weight to take them almost vertically to the bottom while the vessel was moving at two knots. To expedite handling and storing of the iron frame and Gulf III samplers, a rack or gallows frame was constructed and mounted on the stern of the Pathfinder. Use of this rack provided a greater margin of safety and permitted sampling under moderate sea conditions which previously were impractical.

In the basic pattern of sampling at offshore stations, a pair of modified Gulf III's were towed at 5 to 6 knots. One was towed at the surface for 30 minutes. With the second an oblique tow was made lasting 5 minutes at 20 foot depth intervals from bottom to surface. Tow-time with the oblique net varied from station to station depending on depth. This sampler was not towed at depths greater than 200 feet. At night, when seas were calm, one or two surface meter nets were towed at 2 knots for 15 minutes. In addition to the regular stations, surface meter nets were set in tidal currents at stations located near the mouth of Sand Shoal and Wachapreague Inlets.

Within Chesapeake Bay and the York and Pamunkey rivers sampling was done with paired meter nets generally towed at 2 knots for 15 minutes. Oblique tows were made with one pair of nets which were fished at 5 minute intervals, near the bottom, at mid-depth, and at the surface. The second pair was towed at the surface. When ctenophores and jellyfishes were abundant or the water contained large quantities of detritus, tow time was shortened.

LITERATURE CITED

Bridger, J. P. 1956. An efficiency test made with a modified Gulf III high-speed tow-net. J. du Conseil 23 (3): 357-365.

Gehringer, J. W. 1952. High-speed plankton samplers. 2. An all-metal plankton sampler (Model Gulf III). U. S. Fish and Wildl. Serv. Spec. Sci. Rep. Fish. No 88, 12 pp

Joseph, E. B., W. H. Massmann and J. J. Norcross. 1960. Investigations of inner continental shelf waters off lower Chesapeake Bay. Part I- General introducation and hydrography. Ches. Sci. 1(3-4):155-68.

Woodrow L. Wilson
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TABLE 1

STATION DESIGNATION AND LOCATION OF REGULAR MONTHLY STATIONS

Station	Lat.	Long.
Pamunkey R. 50	37° 35'	76° 59'
Pamunkey R. 40	37° 33'	76° 53'
Pamunkey R. 30	37° 32'	76° 50'
York R. 20	37° 26'	76° 42'
York R. 10	37° 19'	76° 36'
York R. 0	37° 15'	76° 22'
Ches. Bay 10	37° 08'	76° 11'
Ches. Bay 0	37° 04'	76° 05'
700 II	37° 00'	75° 35'
700 IV	37° 00'	75° 10'
700 VI	37° 00'	74° 45'
710 I	37° 10	75° 47'
710 II	37° 10'	75° 35'
720 II	37° 20'	75° 35'
720 IV	37° 20'	75° 10'
720 VI	37° 20'	74° 45'
700 VIII*	37° 00'	74° 21'
720 VIII*	37° 20	74° 21'

*Alternate Station

TABLE 2

STATION DESIGNATION AND LOCATION OF EXTRA STATIONS

Station	Lat.	Long.
700 III	37° 00'	75° 22'
720 III	37° 20'	75° 22'
710 VI	37° 10'	74° 45'
718 II	37° 18'	75° 35'
718 I	37° 18'	75° 44'
Sand Shoal	37° 18'	75° 49'
Wachapreague	37° 35'	75° 37'
Kiptopeke	37° 08'	75° 58'
York R. 5	37° 14'	76° 27'
York R. 15	37° 15'	76° 39'
York R. 25	37° 28'	76° 44'
Pamunkey R. 35	37° 34'	76° 51'
Pamunkey R. 45	37° 32'	76° 58'

TABLE 3

COLLECTING GEAR AND TOW TIME BY STATION AND MONTH

MARCH 1961

Station	Date	Hour	Total tow time in minutes				
			Meter nets			Gulf III's	
			Surface	Oblique	Bottom	Surface	Oblique
Pamunkey R. 50	22	1700	30*	60*	-	-	-
Pamunkey R. 40	22	1500	30*	60*	-	-	-
Pamunkey R. 30	22	1330	30*	60*	-	-	-
York R. 20	23	1115	30*	60*	-	-	-
York R. 10	23	1245	30*	60*	-	-	-
York R. 0	24	0930	30*	60*	-	-	-
Ches. Bay 10	24	1115	30*	60*	-	-	-
Ches. Bay 0	24	1305	30*	60*	-	-	-
700 II	15	1000	-	-	-	30	25
700 IV	15	1240	-	-	-	30	25
700 VI	15	1530	-	-	-	30	55
710 I	15	0820	-	-	-	30	10
710 II	18	0805	-	-	-	30	25
720 II	18	0645	-	-	-	30	20
720 IV	15	2054	-	-	-	30	30
720 VI	15	1815	-	-	-	30	50
			Extra tows				
York R. 0	13	1325	-	-	-	30	25
Ches. Bay 10	13	1450	-	-	-	30	15
Ches. Bay 0	13	1635	-	-	-	30	20

*Marion mesh meter net

TABLE 3 (continued)

MARCH 1961 (continued)

Extra tows

Station	Date	Hour	Total tow time in minutes: Meter nets: Surface	Meter nets: Oblique	Meter nets: Bottom	Gulf III's: Surface	Gulf III's: Oblique
Sand Shoal	14	1715	120*	-	-	-	-
Sand Shoal	14	1815	90*	-	-	-	-
Sand Shoal	14	1920	120*	-	-	-	-
Sand Shoal	15	0510	110*	-	-	-	-
Sand Shoal	16	1830	75*	-	-	-	-
Sand Shoal	16	1955	60*	-	-	-	-
Sand Shoal	16	2100	600*	-	-	-	-
Sand Shoal	17	0700	105*	-	-	-	-
Sand Shoal	17	0845	105*	-	-	-	-
York R. 5	20	1345	-	-	60*	-	-
Sand Shoal	28	0930	30*	-	-	-	-
			APRIL 1961				
Pamunkey R. 50	-	-	-	-	-	-	-
Pamunkey R. 40	24	1900	5	10*	-	-	-
Pamunkey R. 30	24	1745	5	10*	-	-	-
York R. 20	24	1600	15	30*	-	-	-
York R. 10	24	1420	15	30*	5*	-	-
York R. 0	26	0025	-	-	-	30	15
Ches. Bay. 10	26	0135	-	-	-	30	15
Ches. Bay 0	26	0250	-	-	-	30	15

TABLE 3 (continued)

APRIL 1961 (continued)

Station	Date	Hour	Total tow time in minutes				
			Meter nets			Gulf III's	
			Surface	Oblique	Bottom	Surface	Bottom
700 II	14	0905	-	-	-	30	20
700 IV	14	1305	-	-	-	30	35
700 VI	12	1630	-	-	-	30	55
710 I	11	1005	-	-	-	30	10
710 II	17	1400	-	-	-	30	15
720 II	11	1210	-	-	-	30	25
720 IV	12	1030	-	-	-	30	25
720 VI	12	1307	-	-	-	30	50
			Extra tows				
Wachapreague	11	2000	120	-	-	-	-
Sand Shoal	19	1100	15	-	-	-	-
York R. 15	24	1505	15	30*	-	-	-
York R. 25	24	1645	15	30*	-	-	-
Pamunkey R. 35	24	1820	5	10*	-	-	-
Pamunkey R. 40	24	2200	60	-	-	-	-
Pamunkey R. 40	25	0545	30	-	-	-	-

TABLE 3 (continued)

MAY 1961

Station	Date	Hour	Total tow time in minutes: Meter nets: Surface	Meter nets: Oblique	Meter nets: Bottom	Gulf III's: Surface	Gulf III's: Oblique
Pamunkey R. 50	11	0800	30*	30	-	-	-
Pamunkey R. 40	11	1000	30	30*	-	-	-
Pamunkey R. 30	11	1130	10*	10	-	-	-
York R. 20	10	1645	30	30*	-	-	-
York R. 10	10	1450	30*	30	-	-	-
York R. 0	9	0910	30	30*	-	-	-
Ches. Bay 10	9	1040	30*	30	-	-	-
Ches. Bay 0	9	1215	30	30*	-	-	-
700 II	15	1930	-	-	-	30	20
700 IV	15	2222	-	-	-	30	30
700 VI	16	0130	-	-	-	30	55
710 I	15	1545	-	-	-	30	10
710 II	15	0515	-	-	-	30	20
720 II	16	1140	-	-	-	30	20
720 IV	16	0835	-	-	-	30	25
720 VI	16	0426	-	-	-	30	50
			Extra tows				
Pamunkey R. 45	10	2205	-	60	-	-	-
Pamunkey R. 45	11	0615	-	60*	-	-	-
Wachapreague	19	1930	15*	-	-	-	-
Wachapreague	19	0835	30*	-	-	-	-
718 II	19	1215	30*	-	-	-	-

TABLE 3 (continued)

MAY 1961 (continued)

Station	Date	Hour	Total tow time in minutes				
			Meter nets			Gulf III's	
			Surface	Oblique	Bottom	Surface	Oblique
Sand Shoal	25	0900	30*	-	-	-	-
718 I	25	1000	30*	-	-	-	-
Sand Shoal	25	1200	20*	-	-	-	-
JUNE 1961							
Pamunkey R. 50	9	0700	30*	30	-	-	-
Pamunkey R. 40	9	0930	30	30*	-	-	-
Pamunkey R. 30	8	0610	10*	10	-	-	-
York R. 20	8	1630	30	30*	-	-	-
York R. 10	7	1045	30*	30	-	-	-
York R. 0	6	0945	30	30*	-	-	-
Ches. Bay 10	6	1120	30*	30	-	-	-
Ches. Bay 0	6	1300	30	30*	-	-	-
700 II	12	2030	-	-	-	30	20
700 IV	12	2330	-	-	-	30	35
700 VI	13	0300	-	-	-	30	55
710 I	12	1720	-	-	-	30	10
710 II	12	1832	-	-	-	30	15
720 II	13	1805	-	-	-	30	10
720 IV	13	1614	-	-	-	30	25
720 VI	13	1303	-	-	-	30	50
700 VIII	13	0614	-	-	-	30	55
720 VIII	13	1004	-	-	-	30	55

TABLE 3 (continued)

JUNE 1961 (continued)

Extra tows

Station	Date	Hour	Total tow time in minutes				
			Meter nets			Gulf III's	
			Surface	Oblique	Bottom	Surface	Oblique
Pamunkey R. 50	8	2125	30*	-	-	-	-
Pamunkey R. 50	9	0630	40	-	-	-	-
Pamunkey R. 50	9	0730	20*	-	-	-	10
Pamunkey R. 50	9	0800	-	-	-	-	10
Sand Shoal	22	1200	15	-	-	-	-
			JULY 1961				
Pamunkey R. 50	7	0807	10	10*	-	-	-
Pamunkey R. 40	6	1629	10	10	-	-	-
Pamunkey R. 30	6	1500	10	10*	-	-	-
York R. 20	6	1311	10	10	-	-	-
York R. 10	6	1109	30	30*	-	-	-
York R. 0	5	1010	30*	30	-	-	-
Ches. Bay 10	5	1145	30	30	-	-	-
Ches. Bay 0	5	1330	30*	30	-	-	-
700 II	7	1515	-	-	-	30	40
700 IV	11	1940	-	-	-	30	60
700 VI	11	2220	30	-	-	30	55
710 I	13	1120	-	-	-	30	10
710 II	13	1245	-	-	-	30	15

TABLE 3 (continued)

JULY 1961 (continues)

Station	Date	Hour	Total tow time in minutes				
			Meter nets			Gulf III's	
			Surface	Oblique	Bottom	Surface	Oblique
720 II	12	0830	-	-	-	30	15
720 IV	12	0424	30	-	-	30	25
720 VI	12	0117	30	-	-	30	50
		Extra tows					
Sand Shoal	13	1900	30	-	-	-	-
Sand Shoal	13	2045	30	-	-	-	-
		AUGUST 1961					
Pamunkey R. 50	10	0715	15	15	-	-	-
Pamunkey R. 40	9	1125	15	15	-	-	-
Pamunkey R. 30	9	0930	15	15	-	-	-
York R. 20	9	0840	10	10	-	-	-
York R. 10	9	0700	10	10	-	-	-
York R. 0	8	0900	30	30	-	-	-
Ches. Bay 10	8	1015	10	10	-	-	-
Ches. Bay 0	8	1200	30	30	-	-	-
700 II	14	1730	-	-	-	30	25
700 IV	14	2010	-	-	-	30	30
700 VI	14	2345	-	-	-	30	55
710 I	19	0905	-	-	-	30	10
710 II	18	1545	-	-	-	30	15
720 II	18	1420	-	-	-	30	15

TABLE 3 (continued)

AUGUST 1961 (continued)

Station	Date	Hour	Total tow time in minutes				
			Meter nets			Gulf III's	
			Surface	Oblique	Bottom	Surface	Oblique
720 IV	18	1135	-	-	-	30	25
720 VI	15	0925	-	-	-	30	50
700 VIII	15	0300	-	-	-	30	55
720 VIII	15	2015	-	-	-	30	55
		Extra tows					
Kiptopeke	8	1330	30	30	-	-	-
Sand Shoal	15	2015	15	-	-	-	-
		SEPTEMBER 1961					
Pamunkey R. 50	21	1830	15*	30	-	-	-
Pamunkey R. 40	21	1645	15*	30	-	-	-
Pamunkey R. 30	21	1430	15*	30	-	-	-
York R. 20	21	1200	15*	30	-	-	-
York R. 10	21	1015	5*	10	-	-	-
York R. 0	22	1530	20*	20	20	-	-
Ches. Bay 10	22	1657	20*	20	20	-	-
Ches. Bay 0	23	1000	15*	30	-	-	-
700 II	11	1535	-	-	-	30	20
700 IV	11	1835	15	-	-	30	30
700 VI	11	2135	-	-	-	30	55
710 I	13	0845	-	-	-	15	15
710 II	13	0910	-	-	-	20	20

TABLE 3 (continued)

SEPTEMBER 1961 (continued)

Station	Date	Hour	Total tow time in minutes: Meter nets Surface	Meter nets Oblique	Meter nets Bottom	Gulf III's Surface	Gulf III's Oblique
720 II	12	1535	-	-	-	30	15
720 IV	12	1240	-	-	-	30	25
720 VI	12	0845	-	-	-	30	50
700 VIII	12	0115	-	-	-	30	50
720 VIII	12	0400	-	-	-	30	50
			Extra tows				
Sand Shoal	12	1825	15*	-	-	-	-
Kiptopeke	22	2005	20*	20	20	-	-
Kiptopeke	23	0745	-	20	-	-	-
			OCTOBER 1961				
Pamunkey R. 50	12	1300	30	30	-	-	-
Pamunkey R. 40	12	1045	10	10	-	-	-
Pamunkey R. 30	12	0920	30	30	-	-	-
York R. 20	11	1620	30	30	-	-	-
York R. 10	11	1400	30	30	-	-	-
York R. 0	10	1345	30	30	-	-	-
Ches. Bay 10	10	1515	30	30	-	-	-
Ches. Bay 0	10	1650	30	30	-	-	-
700 II	16	1743	30	-	-	30	20
700 IV	16	2120	30	-	-	30	25
700 VI	17	0033	30	-	-	30	55

TABLE 3 (continued)

OCTOBER 1961 (continued)

Station	Date	Hour	Total tow time in minutes				
			Meter nets			Gulf III's	
			Surface	Oblique	Bottom	Surface	Oblique
710 I	24	1015	-	-	-	30	30
710 II	24	1155	-	-	-	30	30
720 II	24	1330	-	-	-	30	15
720 IV	25	1310	-	-	-	30	25
720 VI	17	1058	-	-	-	30	50
700 VIII	17	0355	15	-	-	30	55
720 VIII	17	0730	15	-	-	30	55
			Extra tows				
Kiptopeke	11	0745	30	30	-	-	-
York R. 20	11	2000	-	30	-	-	-
720 III	25	1435	-	-	-	15	15
700 III	25	1730	-	-	-	15	15
			NOVEMBER 1961				
Pamunkey R. 50	8	0645	30	30	-	-	-
Pamunkey R. 40	7	1525	30	30	-	-	-
Pamunkey R. 30	7	1335	30	30	-	-	-
York R. 20	8	1210	30	30	10	-	-
York R. 10	8	1300	30	30	10	-	-
York R. 0	9	1115	15	-	-	-	30
Ches.Bay 10	9	1325	15	-	-	-	30
Ches. Bay 0	9	1440	15	-	-	-	30

TABLE 3 (continued)

NOVEMBER 1961 (continued)

Station	Date	Hour	Total tow time in minutes				
			Meter nets			Gulf III's	
			Surface	Oblique	Bottom	Surface	Oblique
700 II	14	1000	-	-	-	30	20
700 IV	14	0729	-	-	-	30	30
700 VI	14	0415	15	-	-	30	55
710 I	13	1530	-	-	-	30	15
710 II	13	1700	-	-	-	30	15
720 II	13	1826	30	-	-	30	15
720 IV	13	2115	30	-	-	30	25
720 VI	14	0020	-	-	-	15	50
			Extra tows				
Sand Shoal	17	1230	60	-	-	-	-
			DECEMBER 1961				
Pamunkey R. 50	6	1020	10	10	10	-	-
Pamunkey R. 40	6	0845	10	10	10	-	-
Pamuneky R. 30	5	1250	10	10	10	-	-
York R. 20	5	1110	10	10	10	-	-
York R. 10	5	0925	30	10	30	-	-
York R. 0	7	0910	10	10	10	-	-
Ches. Bay 10	7	1040	10	10	30	-	-
Ches. Bay 0	7	1235	60	10	60	-	-
700 II	12	0830	-	-	-	15	15
700 IV	12	0609	-	-	-	30	30

TABLE 3 (continued)

DECEMBER 1961 (continued)

Station	Date	Hour	Total tow time in Minutes				
			Meter nets			Gulf III's	
			Surface	Oblique	Bottom	Surface	Oblique
700 VI	12	0330	-	-	-	30	55
710 I	11	1500	-	-	-	30	10
710 II	11	1655	-	-	-	30	15
720 II	11	1816	-	-	-	30	15
720 IV	11	2110	-	-	-	30	25
720 VI	12	0051	-	-	-	30	50
			JANUARY 1962				
Pamunkey R. 50	18	0830	10	-	10	-	-
Pamunkey R. 40	17	1510	10	10	10	-	-
Pamunkey R. 30	17	1340	10	10	10	-	-
York R. 20	17	1115	30	10	30	-	-
York R. 10	17	0940	30	10	30	-	-
York R. 0	16	0910	40	10	30	-	-
Ches. Bay 10	16	1110	30	10	30	-	-
Ches. Bay 0	16	1230	30	10	30	-	-
700 II	24	2245	-	-	-	30	20
700 IV	24	2010	10	-	-	30	30
700 VI	24	1725	10	-	-	30	55
710 I	22	1417	-	-	-	30	20
710 II	22	1530	-	-	-	30	20
720 II	23	1010	-	-	-	30	15
720 IV	24	1212	-	-	-	30	25

TABLE 3 (continued)

JANUARY 1962 (continued)

Station	Date	Hour	Total tow time in minutes: Meter nets: Surface	Meter nets: Oblique	Meter nets: Bottom	Gulf III's: Surface	Gulf III's: Oblique
720 VI	24	1444	-	-	-	30	50
			Extra tows				
Pamunkey R. 50	17	1945	15	-	-	-	-
Sand Shoal	22	1755	30	-	-	-	-
Sand Shoal	22	1850	20	-	-	-	-
Sand Shoal	23	0709	30	-	-	-	--
Wachapreague	24	0820	20	-	-	-	-
			FEBRUARY 1962				
Pamunkey R. 50	15	0850	5	10	10	-	-
Pamunkey R. 40	14	1550	5	10	10	-	-
Pamunkey R. 30	14	1415	5	10	10	-	-
York R. 20	14	1210	30	10	30	-	-
York R. 10	14	1025	30	10	30	-	-
York R. 0	13	0915	30	10	30	-	-
Ches. Bay 10	13	1110	30	10	30	-	-
Ches. Bay 0	13	1220	10	10	10	-	-
700 II	22	0045	-	-	-	30	20
700 IV	21	2207	-	-	-	30	30
700 VI	21	1925	-	-	-	30	50
710 I	20	1515	-	-	-	30	10
710 II	21	1000	-	-	-	30	15
720 II	21	1124	-	-	-	30	15

TABLE 3 (continued)

FEBRUARY 1962 (continued)

Station	Date	Hour	Total tow time in minutes				
			Meter nets			Gulf III's	
			Surface	Oblique	Bottom	Surface	Oblique
720 IV	21	1355	-	-	-	30	25
720 VI	21	1635	-	-	-	30	50
		Extra tows					
Pamunkey R. 50	14	2015	15	-	-	-	-
Sand Shoal	20	1745	15	-	-	-	-
Sand Shoal	20	1800	30	-	-	-	-
		MARCH 1962					
Pamunkey R. 50	14	2030	15	30	-	-	-
Pamunkey R. 40	14	1525	5	10	10	-	-
Pamunkey R. 30	14	1355	5	10	10	-	-
York R. 20	14	1200	15	10	30	-	-
York R. 10	14	1015	15	10	30	-	-
York R. 0	13	0915	15	10	30	-	-
Ches. Bay 10	13	1020	15	10	30	-	-
Ches. Bay 0	13	1235	15	10	30	-	-
700 II	19	1454	-	-	-	30	20
700 IV	19	1719	-	-	-	30	25
700 VI	19	1953	-	-	-	30	55
710 I	20	0912	-	-	-	30	10
710 II	20	0705	-	-	-	30	15
720 II	20	0515	-	-	-	30	15

TABLE 3 (continued)

MARCH 1962 (continued)

Station	Date	Hour	Total tow time in minutes				
			Meter nets			Gulf III's	
			Surface	Oblique	Bottom	Surface	Oblique
720 IV	20	0200	30	-	-	30	25
720 VI	19	2320	-	-	-	30	50
			Extra tows				
710 VI	19	2130	60	-	-	-	-
Sand Shoal	20	1300	30	-	-	-	-
Sand Shoal	20	1320	30	-	-	-	-
Sand Shoal	20	1815	30	-	-	-	-
Sand Shoal	20	1945	30	-	-	-	-
Sand Shoal	21	1600	30	-	-	-	-
Sand Shoal	21	2000	60	-	-	-	-